

APR 02 2009

Application No.: 10/511,322
Art Unit 3753Attorney Docket No. 4140-0111PUS1
Reply to Office Action dated December 8, 2008
Page 2**AMENDMENTS TO THE CLAIMS**

1. (Currently Amended) A valve for controlling fluid flow in a main fluid flow path, comprising:

a valve body having an inlet and outlet port for fluid flow from a fluid pressure source and a flexible conduit which ~~alone forms substantially all of the main fluid flow path between the inlet and outlet ports~~ extends along a greater portion of an extended length path, wherein the flexible tube also forms a valve seal closure member constrained to engage only a non-porous valve seat which extends along only a minor portion of the extended length of the extended length path in the closed position of the valve;

a control port in the valve body for providing a control fluid acting to maintain the flexible valve seal closure member in the closed position under a pressure differential as between that applied to one side of the flexible closure member by said fluid flow through the inlet port acting to lift the flexible valve seal closure member off the valve seat, and that applied on the other side of the flexible valve seal closure member through said control port to close the valve; and

control means for varying said differential pressure to control movements of the flexible valve closure member and regulate fluid flow through the valve.

2. (Canceled)

3. (Previously Presented) A valve as claimed in claim 1 wherein the conduit is circular in cross section and the valve seat in the form of a sphere of larger cross section.

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4. (Previously Presented) A valve as claimed in claim 11, wherein the valve seal is formed between the outer wall of a flexible conduit for fluid flow between the inlet and outlet ports and an abutting protuberance in a passageway for fluid flow in the valve body between the inlet and outlet ports.

5. (Previously Presented) A valve as claimed in claim 1 wherein the conduit is surrounded by an annular space in communication with the control port to provide a pressure differential across the walls of the conduit as between fluid flow in the conduit and fluid supplied to the annular space.

6. (Previously Presented) A valve as claimed in claim 5 further comprising means for feeding the fluid flow to the inlet and control ports of the valve so that equal pressure is applied to either side of the flexible valve closure member to close the valve, said control means including a restrictor valve in the flow of fluid to the control port to supply a sufficient amount of fluid adequately to pressurise the annular space in a predetermined time, and a normally closed switch actuatable to vent the annular space and reduce pressure in the annular space whereby to open the valve.

7. (Previously Presented) A valve as claimed in claim 6 further comprising:

a fluid reservoir in communication with the control port to supplement the pressure in the annular space said switch being actuatable periodically to vent and re-pressurise the reservoir and annular space through the control port to open and close the valve and generate fluid flow from the outlet port as a pulsed flow.

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8. (Previously Presented) A valve as claimed in claim 5 further comprising a feedback valve between the control port and the outlet port for varying the pressure of fluid at the control port in response to an imbalance in pressure at the outlet port thereby to stabilise the pressure or fluid flow at the outlet port.

9. (Previously Presented) A valve as claimed in claim 8 wherein said valve is a primary valve and the feedback valve is a secondary valve with its control port being responsive to pressure variations at the outlet port of the primary valve, the inlet port of the secondary valve being connected to the control port of the primary valve and the outlet port of the secondary valve vented to atmosphere.

10. (Previously Presented) The valve of claim 1, wherein said valve seal is formed between an inner wall of the flexible conduit acting as said valve seal closure member for fluid flow between the inlet and outlet ports, and the valve seat is mounted within the conduit to engage said inner wall of the flexible conduit in the closed position of the valve.

11. (Currently Amended) A valve for controlling fluid flow comprising:
a valve body having an inlet and outlet port for fluid flow from a fluid pressure source;
a substantially non-porous valve seal seat mounted between the inlet and outlet ports, the substantially non-porous valve seal seat having a flexible valve closure member constrained to engage only the a substantially non-porous valve seat in the closed position of the valve;

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a control port in the valve body for providing a control fluid acting to maintain the flexible valve closure member in the closed position under a pressure differential as between that applied to one side of the flexible closure member by said fluid flow through the inlet port acting to lift the flexible closure member off the valve seat, and that applied on the other side of the flexible closure member through said control port to close the valve; and

control means for varying said differential pressure to control movements of the flexible valve closure member and regulate fluid flow through the valve.

12. (New) A valve for controlling fluid flow in a main fluid flow path, comprising:

a valve body having an inlet and outlet port for fluid flow from a fluid pressure source and a flexible conduit, wherein the flexible conduit also forms a valve seal closure member and is the sole support structure for a valve seat element located within the flexible conduit;

a control port in the valve body for providing a control fluid acting to maintain the flexible valve seal closure member in a closed position under a pressure differential as between that applied to one side of the flexible closure member by said fluid flow through the inlet port acting to lift the flexible valve seal closure member off the valve seat element, and that applied on the other side of the flexible valve seal closure member through said control port to close the valve; and

control means for varying said differential pressure to control movements of the flexible valve closure member and regulate fluid flow through the valve.

13. (New) A valve for controlling fluid flow comprising:

a valve body having an inlet and outlet port for fluid flow from a fluid pressure source;

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a valve seat element mounted between the inlet and outlet ports, the valve seat located in a flexible conduit which forms a flexible valve closure member and which is the sole support structure of the valve seat element;

a control port in the valve body for providing a control fluid acting to maintain the flexible valve closure member in the closed position under a pressure differential as between that applied to one side of the flexible closure member by said fluid flow through the inlet port acting to lift the flexible closure member off the valve seat element, and that applied on the other side of the flexible closure member through said control port to close the valve; and

control means for varying said differential pressure to control movements of the flexible valve closure member and regulate fluid flow through the valve.

14. (New) A valve for controlling fluid flow comprising a valve body having an inlet and an outlet port for fluid flow from a fluid pressure source, a valve seal mounted between the inlet and outlet ports, the valve seal having a valve closure member constrained to engage a valve seat in the closed position of the valve, a control port in the valve body for providing a control fluid acting to maintain the valve closure member in the closed position under a pressure differential as between that applied to one side of the closure member by said fluid flow through the inlet port acting to lift the closure member off the valve seat, and that applied on the other side of the closure member through said control port to close the valve, characterized by:

switching control means actuatable periodically to vent and re-pressurize the control fluid fed through the control port to open and close the valve and generate fluid flow from the outlet as a pulsed flow.

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15. (New) The valve as claimed in claim 14, wherein the conduit is surrounded by an annular space in communication with the control port to provide said pressure differential across the walls of a conduit as between fluid flow in the conduit and fluid supplied to the annular space.

16. (New) The valve as claimed in claim 14, further comprising:
a fluid reservoir in communication with the control port to supplement the pressure in the annular space.

17. (New) The valve of claim 15, wherein the valve is adapted to receive fluid flow fed to the inlet and control ports of the valve so that equal pressure is applied to either side of the conduit to close the valve, and further comprising:

a restrictor valve in the flow path of fluid to the control port to supply a sufficient amount of fluid adequately to pressurize the annular space in a predetermined time.

18. (New) The valve of claim 17, wherein said valve seal is formed between the inner wall of the flexible conduit for acting as said valve closure member for fluid flow between the inlet and the outlet ports, and the valve seat mounted within the conduit to engage said inner wall of the flexible conduit in the closed position of the valve.

19. (New) The valve of claim 18, wherein the conduit is circular in cross section and

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the valve seat is in the form of a sphere of larger cross section.

20. (New) The valve of claim 17, wherein the valve seal is formed between the outer wall of the flexible conduit for fluid flow between the inlet and outlet ports and an abutting protuberance in a passageway for fluid flow in the valve body between the inlet and outlet ports.

21. (New) The valve of any one of claims 14-20, further comprising:

a feedback valve between the control port and the outlet port for varying the pressure of fluid at the control port in response to an imbalance in pressure at the outlet port thereby to stabilize fluid flow pressure at the outlet port.

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